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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,023	06/14/2004	Philip A. Lamarre	20030146	4022
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MAINE & ASMUS P. O. BOX 3445 NASHUA, NH 03061			EXAMINER BARRECA, NICOLE M	
			ART UNIT 1756	PAPER NUMBER

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/710,023

Applicant(s)

LAMARRE, PHILIP A.

Examiner

Nicole M. Barreca

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/8/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. Claims 1-20 are pending in this application.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant by "wherein said first (or second) resist open area is subject to develop subsequent to develop of said second (or third) resist open area", as recited in claims 1 and 2. Open area implies that the resist pattern has already been developed. Is the open area a latent image which is undeveloped, or a developed resist pattern?

Claim 7 contains the trademark/trade name SU-8. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the

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present case, the trademark/trade name is used to identify/describe the resist layers and, accordingly, the identification/description is indefinite.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Liao (US 4,767,721).

6. Substrate 10 includes a conventional silicon wafer. Layer 35a of PMMA photoresist is applied to the wafer, followed by PMMA photoresist layer 35b (barrier layer). Layer 40 of a (second) photoresist is applied and baked. The resists are exposed and developed to form opening 45 (open area). See col.3, 3-col.4, 18.

7. Claims 1-5, 9-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Behfar (US 6,653,244).

8. A first layer of photoresist is spun onto a substrate and exposed to a desired pattern, forming a latent image. The first layer is not developed. A second layer of photoresist is deposited on top of the first photoresist layer and is also exposed to a pattern at least partially aligned with the first pattern. Subsequent layers are spun onto

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the top surfaces and additional aligned patterns are exposed. A barrier layer may be provided between successive layers to prevent intermixing. Upon completion of the vertically aligned layers defining the structures, the layers are all developed (col.1, 50-col.2, 11). A first resist layer 14 and second layer 30 are formed, with a barrier film between them. Third layer 40 of a photoresist may also be formed, with barrier films formed between successive layers. Conventional photolithographic tools such as a projection aligner are used to expose the photoresist through a pattern in the desired regions of the film in accordance with the arbitrary shape of the structure to be fabricated (col.3, 1, col.4, 15). The three-dimensional structure can be fabricated on an optical chip and used to form devices such as optical couplers of semiconductor devices. The resist layers are baked following deposition (col.6, 1-60). E-beam, x-ray or other forms of radiation may be used to expose the resists (col.2, 12-22).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behfar as applied to claim 1 above, and further in view of Sherrer (US 6,811,853).

11. Behfar is silent on the material of the substrate and photoresist layers. Sherrer teaches that a semiconductor substrate is preferably silicon (col.6, 23-27) and that PMMA is a conventional photoresist material (col.6, 60-61). It would have been obvious

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to one of ordinary skill in the art to use a silicon substrate in the method of Behfar because Sherrer teaches that a semiconductor substrate is preferably silicon. It would have been obvious to one of ordinary skill in the art to use a PMMA photoresist in the method of Behfar because Sherrer teaches that PMMA is a conventional photoresist material.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole M. Barreca whose telephone number is 571-272-1379. The examiner can normally be reached on Monday-Thursday (9AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicole M Barreca  
Examiner  
Art Unit 1756



5/5/05